

tains, but information in regard to their extent and intensity is still incomplete. A discussion of them will appear in a later copy of the REVIEW.

River stages that were unprecedentedly or unusually low for April prevailed in all of the Mississippi System, except in the Ohio Basin.

Table of flood stages in April, 1931

(All dates in April unless otherwise specified)

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
	<i>Feet</i>			<i>Feet</i>	
Connecticut: Hartford, Conn.-----	16	12	16	17.9	13
Chenango: Sherburne, N. Y.-----	8	10	11	8.8	11
Susquehanna: Oneonta, N. Y.-----	12	11	13	14.5	11
Roanoke:					
Weldon, N. C.-----	30	7	9	32.8	8
Scotland Neck, N. C.-----	23	7	11	25.7	9
Williamston, N. C.-----	7	5	18	8.6	13
Neuse:					
Neuse, N. C.-----	15	8	9	15.8	9
Smithfield, N. C.-----	14	7	11	15.8	9
Cape Fear: Elizabethtown, N. C.-----	22	8	10	25.7	9
Peedee: Mars Bluff Bridge, S. C.-----	17	10	11	17.4	11
Santee:					
Rimini, S. C.-----	12	2	11	14.0	6
Ferguson, S. C.-----	12	5	12	12.6	10
EAST GULF OF MEXICO DRAINAGE					
Tombigbee: Lock 10, Demopolis, Ala.-----	39	6	10	42.3	8

Table of flood stages in April, 1931—Continued

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM					
Missouri Basin					
Grand: Chillicothe, Mo.....	Feet 18	21	22	Feet 21.9	21
Ohio Basin					
Kiskiminitas: Saltsburg, Pa.....	8	4	4	8.8	4
Allegheny: Lock 5, Freeport, Pa.....	24	4	4	24.7	4
Hocking: Athens, Ohio.....	17	5	5	17.4	5
Scioto: Larue, Ohio.....	11	4	4	11.1	4
Holston, North Fork: Mendota, Va.....	8	5	5	10.0	5
WEST GULF OF MEXICO DRAINAGE					
Trinity: Dallas, Tex.....	28	1	2	31.7	1
Rio Grande: Del Rio, Tex.....	10	29	29	10.1	29
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
Willamette, Coast Fork: Saginaw, Ore....	9	1	1	10.4	1
Long Tom: Monroe, Ore.....	8	Mar. 31	7	12.4	2
North Santiam: Mehama, Ore.....	15	do	1	16.0	1
South Santiam: Waterloo, Ore.....	20	do	1	21.0	1
Santiam: Jefferson, Ore.....	10	do	2	17.5	1
Yamhill: McMinnville, Ore.....	35	1	3	41.2	1
Willamette:					
Eugene, Ore.....	12	1	1	13.0	1
Harrisburg, Ore.....	10	Mar. 31	3	15.0	1
Albany, Ore.....	20	2	3	22.9	3
Salem, Ore.....	20	1	2	23.3	2
Oregon City, Ore.....	12	1	5	15.0	3

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

The weather over the North Atlantic during April was in marked contrast to that prevailing during the previous month, which was unusually stormy with abnormal pressure distribution. On the other hand, the number of days with gales during the current month was considerably below the normal, and the gales were not reported on more than three days in any 5° square, the maximum occurring in the square between the fortieth and forty-fifth parallels and thirtieth and thirty-fifth meridians. Up to time of writing only 21 vessels have rendered storm reports indicating a wind force of 9 or over; 4 vessels reported highest force 10, and 1 force 11.

Fog was unusually prevalent over the Grand Banks, where it was reported on from 8 to 14 days. The number of days in which it occurred in other localities is as follows: Along the American coast, between the thirty-fifth and forty-fifth parallels, from 6 to 8 days; over the steamer lanes, between the tenth and fortieth meridians, from 1 to 3 days; along the European coast, from 1 to 4 days; in the Gulf of Mexico, 4 days.

In the following table giving the barometric data at a number of island and coast stations, it will be noticed that Julianehaab, Greenland, and Cape Gracias a Dios, Nicaragua, are missing. From the former station reports were received on only 15 days, and from the latter, none since April 14. According to press reports the station at Cape Gracias was attacked and dismantled by Nicaraguan insurgents. Observations were resumed on May 19, however, and the results should appear in the table for June.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (seventy-fifth meridian), North Atlantic Ocean, April, 1931

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Belle Isle, Newfoundland	29.87	+0.04	30.40	21st	29.84	28th
Halifax, Nova Scotia	29.97	+0.04	30.40	13th	29.56	27th
Nantucket	30.00	+0.03	30.42	13th	29.46	2d
Hatteras	30.06	+0.03	30.40	13th	29.26	1st
Key West	30.01	-0.02	30.24	7th	29.80	1st
New Orleans	30.09	+0.05	30.30	6th	29.84	1st
Turks Island	30.05	+0.03	30.16	4th	29.96	16th
Bermuda	30.12	+0.03	30.30	4th	29.84	24th
Horta, Azores	30.21	+0.10	30.44	16th	29.80	7th
Lerwick, Shetland Islands	29.81	+0.01	30.28	19th	29.34	5th
Valencia, Ireland	29.96	+0.07	30.43	13th	29.07	24th
London	29.88	+0.01	30.29	10th	29.12	26th

¹ From normals shown on Hydrographic Office Pilot Charts, based on observations at Greenwich mean noon, or 7 a. m., seventy-fifth meridian time.

² From normals based on 8 a. m. observations.

³ And on other date or dates.

Charts VIII and IX show the conditions on the 1st and 2d when there was a well-developed disturbance, central on the 1st near the Virginia Capes, the storm area that day extending south into the Gulf of Mexico.

On the 3d and 4th unusually strong northeast trade winds occurred in the vicinity of the Canal Zone, as shown by reports from the British steamship *Shirvan*, given in the table of gales. On the same date there was also a disturbance over the Azores, that reached its greatest intensity on the 4th. On the 6th and 7th a slight depression was off the American coast, between the thirtieth and fortieth parallels, and on the same date moderate gales were also reported from vessels in the middle section of the steamer lanes.

On the 8th and 9th the region between the twentieth meridian and the Azores was swept by a severe disturbance, and on the latter date the Italian steamship *Conte Biancamano*, encountered a northwest wind, force 11, as shown in table of gales.

From the 10th to the 21st moderate weather was the rule over the ocean as a whole, although on the 14th a stiff "Norther" was encountered in the Gulf of Mexico, as shown by the report from the American steamship *Alabama* in the table of gales, and on the 16th a low off the east coast of Newfoundland was responsible for winds of force 7 in the southerly quadrants.

On the 22d a low central near 35° N. and 53° W.,

drifted slowly northward during the next 48 hours, and moderate to strong gales occurred on the 22d in the northerly quadrants, and on the 23d and 24th in the southerly.

On the 23d a disturbance was central near 43° N. and 20° W., that increased in intensity as it moved eastward, and on the 24th northwest gales prevailed over the steamer lanes between the fifteenth and thirtieth meridians.

During the remainder of the month the weather conditions were hardly worthy of note, except that on the 27th a low central near Eastport, Me., was attended by moderate gales, the storm area extending as far south as the thirty-eighth parallel.

OCEAN GALES AND STORMS, APRIL, 1931

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Tatsuno Maru, Jap. S. S.	Tampa	Houston	27 48 N	84 44 W	Mar. 31	4 a. 1	Apr. 1	29.59	W	W, 8	W	W, 8	Steady.
Lotte Leonhardt, Ger. S. S.	New York	Aruba	28 21 N	73 57 W	do.	7 a. 1	do.	29.63	S	WSW, —	WSW	WSW, 9	S, WSW.
Persephone, Danzig M. S.	Las Piedras	Southampton	42 35 N	32 12 W	Apr. 2	11 p. 2	Apr. 4	29.92	SW	NNW, 8	NNE	N, 9	NNW, N.
Shirvan, Br. S. S.	Canal Zone	Lands End	12 12 N	76 32 W	Apr. 3	7 a. 3	Apr. 3	29.80	NE	N, —	ENE	—, 8	NE, ENE.
Prusa, Am. S. S.	Galveston	Barcelona	38 08 N	24 30 W	do.	8 a. 4	Apr. 4	29.60	NNW	NNW, 9	NE	NNW, 9	NW, NE.
Stuyvesant, Du. S. S.	New York	Port au Prince	33 46 N	74 02 W	Apr. 5	Mdt. 5	Apr. 6	29.82	WSW	SSW, 9	SW	SSW, 9	SSW, 9.
President Wilson, Am. S. S.	Marseille	New York	40 50 N	31 50 W	Apr. 7	2 p. 7	Apr. 8	29.61	NW	NW, 5	NNW	NNW, 9	NW, NNW.
Jefferson Myers, Am. S. S.	London	Philadelphia	39 56 N	60 26 W	Apr. 8	2 p. 8	Apr. 9	29.36	SW	SW, 10	NNW	SW, 10	
Oilfield, Br. S. S.	Hull	Curacao	43 38 N	21 25 W	do.	3 p. 8	do.	29.30	NE	N, 10	N	N, 10	NE, NW.
Conte Biancamano, Ital. S. S.	New York	Gibraltar	37 50 N	18 40 W	do.	7 p. 9	do.	29.42	NW	NW, 9	NE	NW, 11	NW, NNE.
Alabama, Am. S. S.	Port Arthur	Wilmington, N. C.	26 20 N	85 40 W	Apr. 13	2 p. 14	Apr. 14	29.76	ENE	NNE, 10	NE	NNE, 10	Steady.
Excelsior, Am. S. S.	Marseille	Boston	42 57 N	58 55 W	Apr. 15	2 a. 15	Apr. 16	29.88	N	N, 7	NW	NW, 9	
Examelia, Am. S. S.	Alexandria	do.	43 40 N	42 50 W	do.	Mdt. 15	Apr. 17	29.55	SE	SW, 8	SW	SE, 9	S, SW.
Boniface, Br. S. S.	Para	Antwerp	50 19 N	0 51 W	Apr. 17	11 a. 18	Apr. 18	29.45	WNW	N, 9	NE	NNW, 10	NNW, NE.
Bilderdijk, Du. S. S.	Rotterdam	Boston	42 21 N	45 10 W	Apr. 22	8 a. 22	Apr. 22	29.84	ESE	ESE, 9	S	ESE, 9	ESE, S.
Jamaica Settler, Br. S. S.	London	Kingston	47 00 N	14 30 W	Apr. 23	8 p. 23	Apr. 24	29.32	WSW	WSW, 7	NW	NW, 9	WSW, WNW.
Lord Kelvin, Br. S. S.	Halifax	Cable Grounds	50 10 N	23 10 W	Apr. 22	10 a. 24	Apr. 25	29.46	W	NW, 7	NW	NW, 9	Steady.
Express, Am. S. S.	Casa Blanca	New York	38 02 N	69 06 W	Apr. 26	9 p. 26	Apr. 27	29.61	S	SW, 9	WNW	SW, 9	S, WSW.
Cingalese Prince, Br. M. S.	Naples	Boston	42 24 N	65 49 W	do.	7 a. 27	do.	29.63	SE	SW, 6	W	WSW, 9	8, SW.
NORTH PACIFIC OCEAN													
Stuart Dollar, Am. S. S.	Legaspi	Los Angeles	35 20 N	159 00 E	Mar. 31	8 a. 2	Apr. 2	29.49	SSE	SW, 10	SW	SW, 10	SSE-SW.
Shanghai, Am. S. S.	San Francisco	do.	36 56 N	149 18 E	Apr. 2	10 a. 2	do.	29.26	WNW	WNW, 10	W	WNW, 10	WNW-W.
Silvercedar, Br. M. V.	Balik Papan	do.	38 16 N	154 58 W	do.	do.	do.	do.	do.	do.	do.	do.	do.
Nevada, Am. S. S.	Portland	Yokohama	46 25 N	155 32 E	do.	10 p. 2	Apr. 3	29.96	NE	NE, 8	N	N, 11	NE-N.
Grays Harbor, Am. S. S.	Tacoma	do.	48 05 N	157 03 E	do.	6 a. 3	Apr. 4	29.69	E	N, 10	NNW	ENE, 10	ENE-N.
do.	do.	do.	40 32 N	148 06 E	Apr. 5	3 a. 6	Apr. 6	29.61	SE	SE, 9	SSW	ESE, 9	SE-WSW.
Canad. Winner, Br. S. S.	Victoria	Panama	14 28 N	95 58 W	do.	3 p. 5	do.	29.97	ESE	N, 10	N	N, 11	S-NE.
Iowan, Am. S. S.	Los Angeles	Balboa	15 10 N	96 00 W	do.	5	do.	29.88	ENE	ENE, 7	N	N, 10	ENE-N.
Golden Tide, Am. S. S.	Portland	Yokohama	49 08 N	142 20 W	Apr. 6	8 a. 6	Apr. 7	29.42	WNW	WSW, —	N	WNW, 9	WNW-WSW.
Grays Harbor, Am. S. S.	Tacoma	do.	38 50 N	145 20 E	do.	Noon 7	Apr. 8	29.13	WSW	W, 9	NW	W, 9	8-WNW.
Stuart Dollar, Am. S. S.	Legaspi	Los Angeles	40 55 N	161 40 W	Apr. 10	11 a. 10	Apr. 11	29.43	SW	SW, 7	WNW	WNW, 9	WSW-WNW.
Chief Capitano, Br. S. S.	Port Alberni	Osaka	49 25 N	174 15 E	Apr. 11	2 p. 12	Apr. 12	28.92	SSW	WSW, 9	WNW	WSW, 9	WSW-WNW.
Canad. Seigneur, Br. S. S.	Union Bay	Yokohama	48 11 N	168 22 E	Apr. 12	4 a. 12	do.	29.04	W	W, 9	W	W, 9	W-WSW.
Golden River, Am. S. S.	Hong Kong	San Francisco	46 45 N	153 40 W	Apr. 17	4 p. 20	Apr. 20	29.93	NE	NE, 7	NE	NE, 9	NNE-NE.
Emp. of Russia, Can. S. S.	Victoria	Yokohama	49 32 N	170 59 E	do.	4 p. 18	do.	29.35	SSW	S, 8	W	S, 10	S-SSW.
Minnesotan, Am. S. S.	Los Angeles	Balboa	14 26 N	96 42 W	Apr. 22	—22—	Apr. 23	29.82	ENE	ENE, 7	N	NNE, 9	ENE-NNE.
Golden Tide, Am. S. S.	Portland	Yokohama	43 30 N	156 26 E	do.	3 a. 23	Apr. 24	29.55	SSW	SW, 7	N	SSW, 10	SSW-WNW.
do.	do.	do.	38 51 N	146 21 E	Apr. 25	9 p. 25	Apr. 26	29.87	NNW	NNW, 10	NNW	SSW, 10	SSW-WNW.
Jeff Davis, Am. M. V.	San Pedro	Honolulu	25 08 N	148 48 W	Apr. 27	4 p. 27	Apr. 27	29.67	SW	WSW, 8	W	WSW, 8	WSW-NW.
Pres. Madison, Am. S. S.	Seattle	Yokohama	47 50 N	165 03 E	Apr. 26	6 a. 27	do.	29.12	SSW	S, 8	WSW	S, 8	8-WSW.
City of Los Angeles, Am. S. S.	Los Angeles	Honolulu	29 26 N	137 05 W	Apr. 28	3 a. 28	Apr. 28	29.60	SE	SE, 9	SE	SE, 10	Steady.
Shoyo Maru, Jap. S. S.	Yokohama	Los Angeles	41 19 N	159 19 E	do.	1 p. 29	Apr. 30	29.36	SE	E, 9	NE	E, 9	
Golden Star, Am. S. S.	Hong Kong	San Francisco	41 05 N	153 55 E	do.	8 p. 28	Apr. 29	29.43	SE	SE, 7	NE	NE, 9	SE-NE.
do.	do.	do.	43 10 N	159 35 E	Apr. 30	6 p. 30	May 1	29.03	SE	SE, 8	SW	SE, 9	SE-SW.
SOUTH PACIFIC OCEAN													
Canad. Conqueror, Can. S. S.	Panama	Auckland	32 55 S	174 20 W	Apr. 9	4 a. 10	Apr. 10	29.29	NNE	NE, 10	WSW	W, 10	